Guide for Independent QA Inspectors

101 - General Instructions

Scope Statement

Because independent QA inspection is not usually provided on a full-time basis, the Inspector will randomly monitor the Contractor's inspection techniques and test procedures to ensure compliance with the Contract Documents.

UDOT may direct that State inspection be provided by an independent Quality Assurance Inspector for steel construction.

Independent QA inspection does not supplement or replace any inspection that is the responsibility of the Contractor. It verifies that the Contractor's QC/QA programs produce acceptable results.

The Contractor must submit a QC plan to the Materials Engineer for approval prior to commencing any project operations.

Structural steel acceptance at the shop illustrates independent QA inspection. Defects in materials or workmanship discovered after State acceptance are the responsibility of the Contractor.

Quality Assurance performed by the Department may include verification of any or all steps marked "QA." Quality Assurance may order back-up radiographs as determined by the Materials Engineer.

Procedure

The Contractor provides shop drawings and copies of correspondence pertaining to materials or workmanship.

The State Inspector provides specifications and any necessary instruction.

Keep a permanent, bound diary as required by the Materials Engineer.

QC/QA

1. Review the approved shop drawings, any pertinent correspondence, the Steel and Concrete Construction Manual, applicable provisions of the Standard Specifications, and any special specifications.
2. Obtain the tools identified in Table C1-1.

Table C1-1	
Provided by the Inspector	**Provided by the Contractor**
Flashlight	Steel Measuring Tape (100 ft.)
Magnifying Glass	Steel Wire
Rule(s)	Straight Edge
Feeler Gauges	Calipers
Roughness Compactor	Weld Gauges(s)
Portable Rockwell C Hardness Tester	Pit Depth Gauge
Approved Acceptance Stamp	Welding Shield
Wet-Film Thickness Gauge	Temperature-Indicating Crayons
	Dry Film Thickness Gauge

3. Review the "Status of Fabrication Report" every week.
4. Sign and submit the following reports or drawings prepared by the Contractor:

    - Radiographic Reports
    - Magnetic Particle Test Reports
    - Dye Penetrant Test Reports
    - Ultrasonic Reports

102 - Before Welding

Scope Statement

Certify that adequate welding conditions exist.

Quality Assurance performed by the Department may include verification of any or all steps marked "QA." Quality Assurance may order back-up radiographs as determined by the Materials Engineer.

Procedure

Observe the layout to ascertain if the Contractor can achieve the required accuracy.
Verify that steel pieces, when assembled, will be stressed parallel to the rolling direction.

Examine welder, welding operator, and tacker qualifications and witness qualification tests, when required.

Review welding procedure specifications and verify State approval.
Verify the condition of electrodes and fluxes, and ensure that they are properly stored.
Determine that only approved welding consumables are used.
QC/QA

1. Check mill test reports to verify that the mechanical properties, chemical analysis, and BUY AMERICA provisions (when required) conform to the requirements of the Contract Documents.
2. Verify the heat identity of random plates and shapes and all fracture-critical materials.
3. Visually inspect surfaces and machined ends.
4. Visually inspect flame-cut surfaces.
5. Inspect welding equipment to ensure that it functions properly.
6. Check for proper weld joint fit-up and groove weld preparation.
7. Verify proper use of run-off plates and backing bars, when approved.
8. Examine joint for cleanliness and mill scale removal. Avoid materials that may be sources of hydrogen and other gases.
9. Before welding is initiated, check temperatures to verify that a soaking (thru-thickness) preheat has been established.

103 - During Welding

Scope Statement
Ensure proper welding techniques are observed.

Quality Assurance performed by the Department may include verification of any or all steps marked "QA." Quality Assurance may order back-up radiographs as determined by the Materials Engineer.

Procedure
Verify that operating parameters (amps, volts, travel speed, etc.) conform to the approved welding procedure specification.
Ensure that all weld repairs are done in accordance with approved welding procedures.
QC/QA

1. Observe the size, shape, and appearance of weld beads.
2. Ensure proper weld cleaning between passes.
3. Ensure that the weld joint consists of background-sound weld metal.
4. Confirm that no welding is done over visible base metal or weld defects.
5. Visually inspect welds as they are completed for conformance with the Contract Documents.

104 - After Welding

Scope Statement
Inspect for post-heat initiation, damage control, test results, and adequate welding procedures. Apply inspection sticker when all conditions are met.

Quality Assurance performed by the Department may include verification of any or all steps marked "QA." Quality Assurance may order back-up radiographs as determined by the Materials Engineer.
Procedure
Determine that surface and edge grinding conform to the specifications and do not reduce weld and base metal thickness below acceptable limits.
Verify that loading for shipment conforms to specification.
QC/QA

1. Determine that post-heat, when required, is initiated immediately upon completion of welding. Ensure that post-heat, when required, is maintained at the required temperature for the specified minimum amount of time.
2. Observe removal of run-off plates and weld-backing to ensure that destructive procedures are not employed.
3. Spot check radiographic preparation and technique. Review radiographs and reports.
4. Spot check ultrasonic, magnetic particle, and dye penetrant tests when required by the Contract Documents or ordered by the Materials Engineer. Review reports.
5. Inspect preparation for repair welding, welding, and post-heat, when required.
6. Observe heat curving, cambering, or straightening, when allowed. Verify conformance to specifications.
7. Examine component holes before assembly.
8. Check the shop assembly, and examine fastener holes in the assembled or the template-reamed pieces.
9. Observe camber and curvature measurements.
10. Check cleaning of weathering steel and cleaning and painting of painted steel.
11. Check storage condition of finished members.
12. To indicate complete acceptance, place the final acceptance stamp near the erection mark. Acceptance-tag small pieces and bundles.